

SEMICONDUCTOR DEVICE AND ITS MANUFACTURE

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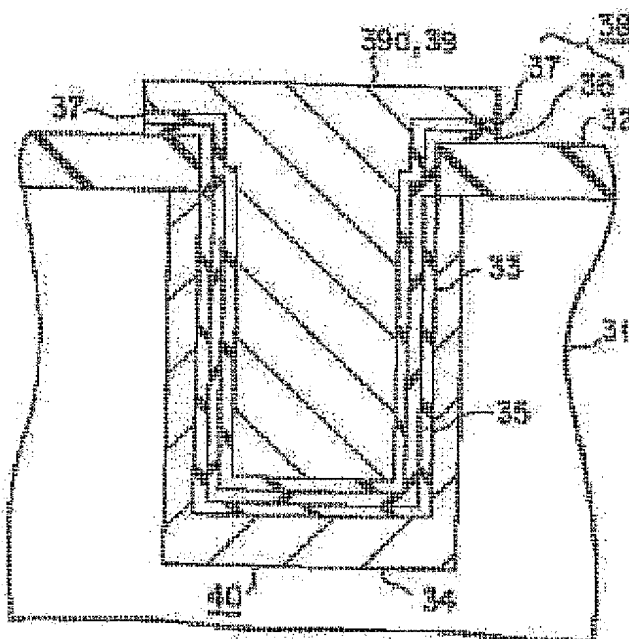
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Abstract of JP 8045927 (A)

PURPOSE: To obtain a semiconductor device fitted with a composite insulating film which is high in dielectric strength, prevented from deteriorating in reliability, and lessened in thickness by a method wherein the semiconductor device is equipped with a semiconductor layer and a thermal nitride film which is directly provided onto the semiconductor layer and whose oxygen content is below a specific value in oxygen concentration. **CONSTITUTION:** A semiconductor device is equipped with a semiconductor layer 34 and a thermal nitride film 35 which is directly provided onto the semiconductor layer 34 and of oxygen concentration 1.36×10^{-15} atoms/cm² or below. For instance, a trench 33 is cut in a semiconductor wafer 31, and an impurity diffusion layer 34 is formed on the inner surface of the trench 33.; Then, the semiconductor wafer 31 is thermally treated in an NH₃ gas atmosphere of reduced pressure, whereby not only a natural oxide film is removed but also a thermal nitride film 35 is formed, and then a CVD silicon nitride film 36 is formed. Thereafter, a silicon oxide film 37 is formed, and a composite insulating film 38 of three-layered structure composed of the silicon oxide film 37, the CVD silicon nitride film 36, and the thermal nitride film 35 is formed, furthermore an electrode 39 formed of polycrystalline silicon film 39a is provided, and thus a capacitor 40 is formed.



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